

REMARKS

Claims 1-28 are pending with Claims 1-8 being independent. Claims 5-8 are withdrawn from consideration, leaving Claims 1-4 and 9-28 open for prosecution with Claims 1-4 being independent. Claims 29-32 are new. No new matter has been added.

A. 35 U.S.C. § 103 REJECTIONS OVER SHI IN VIEW OF XIE

Claims 1-4, 10-14, and 16-24 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,645,948 to Shi et al. ("Shi") in view of U.S. Patent Application Publication No. 2003/0215667 A1 to Xie ("Xie").

Applicant respectfully traverses these rejections. For at least the following reasons, Examiner has failed to establish a *prima facie* case of obviousness.

Independent Claims 1-4 all require a host material and a guest material in an electroluminescent layer to have a chemical structure that includes a benzimidazole skeleton. The combination of the cited art does not teach or suggest an electroluminescent layer with host and guest material that both have a benzimidazole skeleton. As discussed in Section A.5 of the Remarks Submitted With Request for Continued Examination filed on October 29, 2007, the claimed combinations of elements yields unexpected results. Furthermore, the claimed combinations of elements demonstrate synergistic properties that could not be predicted based solely on the combination of the elements of the cited art. Applicants submit that one of ordinary skill in the art at the time of the present application would not have been led to the claimed invention by the disclosure of *Xie*, as a modification of *Shi*.

MPEP 2143 states: "The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit."

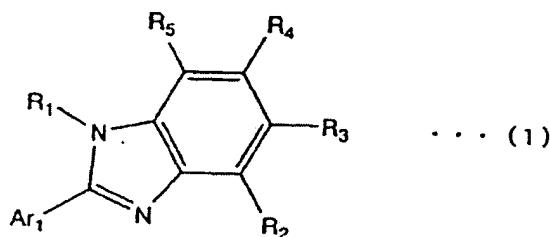
Examiner has failed to make explicit the analysis supporting a rejection under 35 U.S.C. 103. Examiner merely stated: "[i]t would have been obvious to one of ordinary skill in the art to

have selected the coumarin derivative according to Xie for the Shi et al. device, because Shi et al teaches coumarin derivatives are desired as dopant (guest) material for incorporation into the light emitting layer.” Office Action, at 4.

Examiner has failed to identify any teaching, suggestion, or motivation in the cited art that would have led one of ordinary skill to choose a guest/host combination in which both the guest and the host share a benzimidazole skeleton.

Examiner has also failed to address how one of ordinary skill in the art might choose the coumarin of *Xie* from the essentially infinite number of possible coumarin derivatives. Given the general use of “coumarins” cited by *Xie*, along with the wide variety of coumarins available and the lack of prioritization and/or selection criteria in the cited art, the Examiner has unquestionably used impermissible hindsight reasoning in combining the host material of *Xie* and the guest material of *Shi*. There is simply no motivation to modify the *Shi* invention by specifically selecting a coumarin structure from such a large group of compounds, and further, to seek out a particular species of such a structure, *i.e.*, as disclosed by *Xie*.

In fact, the claimed combination of elements yields unexpected results. The Application states: “[a]ccording to the present invention, device characteristics (luminous efficiency, luminous characteristics, or the like) of an electroluminescent element is improved by using host materials and guest materials which have a common skeleton (represented by the following general formula 1) for an electroluminescent layer interposed between a pair of electrodes in the electroluminescent layer.



Application, abstract.

Furthermore, Comparative Example 1, along with Example 4 and FIGS. 7-10 in the Application, provide data showing unexpected improvement using host and guest materials with

a common benzimidazole skeleton. U.S. Patent Application Publication No. 2004/0209119, paragraphs [0103] – [0115], and FIGS. 7-10.

Comparing Comparative Example 1, for which the host and guest materials *do not* have a common structure, with Example 2, for which the host and guest materials *do* have a common structure, the Application states:

The result provides the fact that the luminance to an applied voltage is significantly decreased compared with that of the device configuration shown in Example 2.

Id., para. [0113].

Also in this case the current efficiency is worse than that represented by plot 2 of the device configuration shown in Example 2.

Id., para. [0114].

The current-voltage characteristics plot 1 in FIG. 10 shows that current flow is only approximately 0.02 mA at an applied voltage of 7 V.

Id., para. [0115].

From the comparative results described above, the device configuration can be improved by forming the electroluminescent element using host materials and guest materials which have a common skeleton according to the invention.

Id., para. [0116].

Thus, Comparative Example 1 provides evidence of unexpected results using the claimed combination of guest materials (coumarin derivatives) and host materials with benzimidazole skeletons.

Additionally, the cited art does not teach or suggest all the claim limitations. For example, Formula 8 of independent Claim 4 requires only hydrogen substituents on the benzyl ring of the benzimidazole. In *Xie*, however, these substituents (R^6 – R^9 of Formula II) cannot be hydrogen. *Xie*, paragraph [0027]. Thus, the cited art does not teach or suggest all the limitations of Claim 4.

For each of the reasons above, *prima facie* obviousness has not been established. As such, independent Claims 1-4, and Claims 10-14 and 16-24 dependent therefrom, are patentable over *Shi* in view of *Xie*. Applicants respectfully request removal of the 35 U.S.C. § 103(a) rejections of Claims 1-4, 10-14, and 16-24 over *Shi* in view of *Xie*.

B. 35 U.S.C. § 103 REJECTIONS OVER SHI IN VIEW OF XIE AND FURTHER IN VIEW OF OKADA

Claims 9 and 15 are rejected under 35 U.S.C. § 103(a) as unpatentable over *Shi* in view of *Xie* and further in view of U.S. Patent Application Publication No. 2002/0055014 to Okada et al. (“*Okada*”).

Applicant respectfully traverses these rejections.

Claims 9 and 15 depend from independent Claim 4. Formula 8 of Claim 4 requires only hydrogen substituents on the benzyl ring of the benzimidazole. In *Xie*, however, these substituents ($R^6 - R^9$ of Formula II) cannot be hydrogen. *Xie*, paragraph [0027]. Thus, the cited art does not teach or suggest all the limitations of Claim 4. *Okada* does not cure this deficiency.

For this reason, as well as the other reasons in Section A, *prima facie* obviousness has not been established, and Claims 9 and 15 are patentable over the cited art. Applicants respectfully request removal of the 35 U.S.C. § 103(a) rejections of Claims 9 and 15 over *Shi* in view of *Xie* and further in view of *Okada*.

C. 35 U.S.C. § 103 REJECTIONS OVER SHI IN VIEW OF XIE AND FURTHER IN VIEW OF KAWAMI

Claims 25-28 are rejected under 35 U.S.C. § 103(a) as unpatentable over *Shi* in view of *Xie* and further in view of U.S. Patent No. 5,929,561 to Kawami et al. (“*Kawami*”).

Applicant respectfully traverses these rejections.

For the reasons in Section A, *prima facie* obviousness has not been established, and independent Claims 1-4 are patentable over *Shi* in view of *Xie*. *Kawami* does not cure this deficiency. For these reasons, Claims 25-28 are patentable over the cited art. Applicants respectfully request the removal of the 35 U.S.C. § 103(a) rejections of Claims 25-28 over *Shi* in view of *Xie* and further in view of *Kawami*.

D. NEW CLAIMS

New Claims 29-32 depend from independent Claims 1-4, respectively. These claims each recite in part: "wherein at least three of R₂ to R₅, which may be the same or different, are individually a halogen atom, a lower alkyl group, an alkoxy group, an acyl group, a nitro group, a cyano group; an amino group, a dialkylamino group, a diarylamino group, a vinyl group which may have a substituent, an aryl group which may have a substituent, or a heterocyclic group which may have a substituent."

The combination of the cited art does not teach or suggest the feature recited above. For this reason, Claims 29-32 are allowable over the cited art.

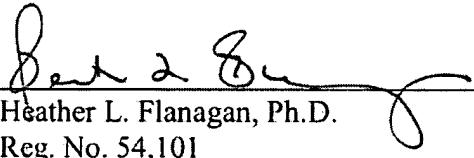
E. CONCLUSIONS

Applicants submit that all claims are in condition for allowance.

The excess claim fees are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 12732-220001.

Respectfully submitted,

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